

**WHAT IS CLAIMED IS:**

1. A self-pointing antenna comprising:  
an antenna comprising a reflector, a feed, an elongated boom arm coupled to said reflector and supporting said feed, and a pair of support struts coupled between said reflector and said boom arm; and  
an actuator operatively coupled with said support struts for permitting movement of said support struts for adjusting the position of said feed relative to said reflector so as to selectively adjust either/or both of the beam elevation and azimuth of a main beam axis of said antenna.
- 10 2. The antenna of claim 1 wherein said actuator is mounted to said boom arm and comprises a two-axis actuator.
- 15 3. The antenna of claim 2 wherein said actuator is mounted to a top side of said boom arm.
4. The antenna of claim 2 wherein said actuator is mounted to a bottom side of said boom arm.
- 20 5. The antenna of claim 2 wherein said actuator comprises an automotive mirror-glass actuator.
6. The antenna of claim 1 wherein each of said support struts comprises an elongated ligature and said actuator comprises a mechanism for adjusting the effective length of one or both of said ligatures.
- 25 7. The antenna of claim 6 wherein said actuator is mounted to said boom arm.
- 30 8. The antenna of claim 6 wherein said actuator is mounted to said reflector.

9. The antenna of claim 6 wherein said actuator comprises a pair of actuators mounted to said reflector and each operatively coupled to said one of said ligatures.

10. In an antenna structure, a method of self-directing a main beam axis of said antenna structure, said method comprising:

- 5 supporting a feed on an elongated boom arm coupled to said reflector;
- supporting said boom arm by a pair of support struts extending between said reflector and said boom arm; and
- adjusting an effective length of one or both of said support struts to thereby adjust
- 10 the position of said feed relative to said reflectors so as to selectively adjust either/or both of a beam elevation and beam azimuth of the main beam axis of said antenna.

11. The method of claim 10 wherein said adjusting comprises mounting an actuator to said boom arm and support struts.

15 12. The method of claim 11 wherein said actuator is mounted to a top side of said boom arm.

20 13. The method of claim 11 wherein said actuator is mounted to a bottom side of said boom arm.

14. The method of claim 10 wherein adjusting comprises mounting a pair of actuators to said reflector, each actuator operatively coupled to said one of said ligatures.

25 15. A self-pointing antenna comprising:

- means for supporting a feed on an elongated boom arm coupled to said reflector;
- means extending between said reflector and said boom arm for supporting said boom arm; and
- means for adjusting an effective length of said boom arm supporting means to
- 30 thereby adjust the position of said feed relative to said reflectors so as to selectively adjust

either/or both of a beam elevation and beam azimuth of the main beam axis of said antenna.

16. The antenna claim 15 wherein means for adjusting comprises an actuator.

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17. The antenna of claim 16 wherein said actuator is mounted to a top side of said boom arm.

18. The antenna of claim 16 wherein said actuator is mounted to a bottom side  
10 of said boom arm.

19. The antenna of claim 16 wherein said actuator comprises an automotive  
mirror-glass actuator.

15 20. The antenna of claim 16 wherein each of said support structures comprises  
an elongated ligature.

21. The antenna of claim 20 wherein said actuator is mounted to said boom  
arm.

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22. The antenna of claim 20 wherein said actuator is mounted to said reflector.

25 23. The antenna of claim 20 wherein said actuator comprises a pair of  
actuators mounted to said reflector and each operatively coupled to said one of said  
ligatures.

24. A self-pointing antenna comprising:  
an antenna comprising a reflector, a feed, an elongated boom arm coupled to said  
reflector and supporting said feed, and a pair of support struts coupled between said  
30 reflector and said boom arm; and

an actuator operatively coupled with said support struts for permitting movement of said support struts and/or said boom arm for adjusting the position of said feed relative to said reflector so as to selectively adjust either/or both of the beam elevation and azimuth of a main beam axis of said antenna.

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25. The antenna of claim 24 wherein said actuator connects said boom arm to said support struts and by rotation of the actuator causes the angle between the struts and boom arm to be adjusted.

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26. The antenna of claim 25 wherein said actuator is mounted to said boom arm and comprises a two-axis actuator.

27. The antenna of claim 26 wherein said actuator is mounted to a top side of said boom arm.

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28. The antenna of claim 27 wherein said actuator is mounted to a bottom side of said boom arm.

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29. The antenna of claim 26 wherein said actuator comprises an automotive actuator.

30. The antenna of claim 24 wherein each of said support struts comprises an elongated ligature and said actuator comprises a mechanism for adjusting the effective length of one or both of said ligatures.

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31. The antenna of claim 30 wherein said actuator is mounted to said boom arm.

32. The antenna of claim 30 wherein said actuator is mounted to said reflector.

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33. The antenna of claim 30 wherein said actuator comprises a pair of actuators mounted to said reflector and each operatively coupled to said one of said ligatures.

5        34. A self-pointing antenna comprising:  
a reflector, one of a feed and a sub-reflector, and a plurality of support struts  
coupled between said reflector and said one of a feed and a sub-reflector and supporting  
said one of a feed and a sub-reflector; and  
at least one actuator for adjusting the position of said one of a feed and a sub-  
reflector relative to said reflector so as to selectively adjust either/or both of the beam  
elevation and azimuth of a main beam axis of said antenna.

10      35. The antenna of claim 34 wherein said actuator is mounted to said one of a feed and a sub-reflector and comprises a two-axis actuator.

15      36. The antenna of claim 34 wherein said actuator is mounted to said one of a feed and a sub-reflector.

20      37. The antenna of claim 34 wherein said actuator comprises a two-axis  
motorized carriage.

25      38. The antenna of claim 36 wherein said actuator comprises a two-axis  
motorized carriage.

30      39. The antenna of claim 34 wherein said actuator comprises a pair of  
orthogonally acting mechanisms, each comprising a lead screw and at least one guide rail  
and a motor attached to said lead screw.

35      40. The antenna of claim 39 wherein said actuator is mounted to said one of a feed and a sub-reflector.

41. The antenna of claim 34 wherein at least two actuators are mounted to said reflector and to at least two of said support struts.

42. The antenna of claim 34 and further including a readout device operatively coupled to said actuator to allow closed loop control of the position of said sub-reflector.

43. The antenna of claim 39 and further including a readout device operatively coupled to said actuator to allow closed loop control of the position of said sub-reflector.

44. In an antenna structure having a reflector and one of a feed and a sub-reflector, a method of self-directing a main beam axis of said antenna structure, said method comprising:

supporting a sub-reflector by a plurality of support struts extending between said reflector and said sub-reflector; and

adjusting the position of said one of a feed and a sub-reflector relative to said reflector so as to selectively adjust either/or both of a beam elevation and beam azimuth of the main beam axis of said antenna.

45. The method of claim 44 wherein said adjusting comprises mounting an actuator to said one of a feed and a sub-reflector and said support struts.

46. The method of claim 43 wherein said adjusting comprises mounting at least two actuator to said reflector and to at least two of said support struts.

47. A self-pointing antenna comprising:  
a reflector and one of a feed and a sub-reflector  
means for supporting a sub-reflector operatively coupled to said reflector; and  
means for adjusting the position of said one of a feed and a sub-reflector relative to said reflector so as to selectively adjust either/or both of a beam elevation and beam azimuth of the main beam axis of said antenna.

48. The antenna claim 47 wherein said means for adjusting comprises an actuator.

49. The antenna of claim 48 wherein said actuator is mounted to said one of a feed and a sub-reflector.

50. The antenna of claim 48 wherein said actuator comprises a two-axis motorized carriage.

51. The antenna of claim 49 wherein said actuator comprises a two-axis motorized carriage.

52. The antenna of claim 51 wherein said actuator comprises a pair of orthogonally acting mechanisms, each comprising a lead screw and at least one guide rail and a motor attached to said lead screw.

53. The antenna of claim 52 wherein said actuator is mounted to said sub-reflector.

54. The antenna of claim 51 and further including a readout device operatively coupled to said actuator to allow closed loop control of the position of said one of a feed and a sub-reflector.

55. The antenna of claim 52 and further including a readout device operatively coupled to said actuator to allow closed loop control of the position of said one of a feed and a sub-reflector.

56. The antenna of claim 47 wherein at least two actuators are mounted to said reflector and to at least two of said support struts.